



HEAT ACCLIMATIZATION AND EXERTIONAL HEAT MANAGEMENT

It is the position and recommendation of the NIAA and its Sports Medicine Advisory Committee that prevention is the best way to avoid exertional heat stroke. Prevention includes educating athletes and coaches about:

1. Recognition and management of exertional heat illnesses;
2. The risks associated with exercising in hot and/or hot and humid environmental conditions;
3. The need for gradual acclimatization over a 14 day period;
4. Guidelines for proper hydration;
5. Implementing practice/competition modifications according to local temperature and relative humidity readings.

DEFINITIONS

Exertional heat illness includes the following conditions, ordered from the least to the most dangerous:

1. Exercise associated muscle cramps: an acute, painful, involuntary muscle contraction usually occurring during or after intense exercise, often in the heat, lasting approximately 1-3 minutes.

2. Heat syncope: also known as orthostatic dizziness, it refers to a fainting episode that can occur in high environmental temperatures, usually during the initial days of heat exposure.

3. Exercise (heat) exhaustion: the inability to continue exercise due to cardiovascular insufficiency and energy depletion that may or may not be associated with physical collapse.

4. Exertional heat stroke: a severe condition characterized by core body temperature $> 40^{\circ}\text{C}$ (104°F), central nervous system (CNS) dysfunction, and multiple organ system failure induced by strenuous exercise, often occurring in the hot environments.

HEAT ACCLIMATIZATION PROTOCOL

Days 1-4: Saturday, August 9; Monday, August 11; Tuesday, August 12; Wednesday, August 13, 2014

Days 1 through 4 of the heat-acclimatization period consist of the first 4 days of formal practice. During this time, athletes may not participate in more than one (1) practice per day. If the practice is interrupted by inclement weather or heat restrictions, the practice should recommence once conditions are deemed safe. Practices during days 1- 4 of the heat-acclimatization period in sports requiring protective equipment (i.e.) helmets and/or shoulder pads are not permitted.

Days 5-7: Thursday, August 14; Friday, August 15; Saturday, August 16; 2014

Football only: helmets (et. all per NAC 386.722) may be worn, and contact with blocking sleds and tackling dummies may be initiated.

Days 5-14:

Beginning no earlier than day 5 and continuing through day 14, double-practice days are permitted. The two practices should be separated by at least three (3) continuous hours in a cool environment. On a double-practice day, neither practice should exceed three (3) hours in duration and/or student-athletes should not participate in more than five (5) total hours of practice per day.

Warm-up, stretching, cool-down, walk-through, conditioning, and weight-room activities are included as part of the practice time.

Beginning on day 8 AND ***no earlier than*** day 8, full-contact sports may begin 100% live contact drills with all protective equipment being worn.

Because the risk of exertional heat illnesses during the preseason heat-acclimatization period is high, ***we strongly recommend*** that a N.A.T.A. athletic trainer be on site before, during, and after all practices.

HYDRATION STRATEGIES

Sufficient, sanitary, and appropriate fluid should be readily accessible and consumed at regular intervals before, during, and after all sports participation and other physical activities to offset perspiration loss and maintain adequate hydration while avoiding overdrinking.

Generally 1.0 to 1.5 L (approximately 34–50 oz.) per hour for adolescent boys and girls is enough to sufficiently minimize perspiration induced body-water deficits during exercise and other physical activity as long as their pre-activity hydration status is good.

Pre-activity to post-activity body-weight changes can provide more specific insight to a person's hydration status and rehydration needs. Athletes should be well-hydrated before commencing all activities

The following guidelines are suggested:

| CONDITION | % Body Weight Change |
|-------------------------|-----------------------------|
| Well hydrated | +1 to -1 |
| Minimal dehydration | - 1 to -3 |
| Significant dehydration | -3 to -5 |
| Serious dehydration | > -5 |

RETURN TO PLAY FOLLOWING EXERCITIONAL HEAT STROKE

The following is the protocol for return to play following heat stroke:

1. Refrain from exercise for at least 7 days following the acute event.
2. Follow-up in about 1 week for physical exam by a licensed physician (MD, DO).
3. When cleared for activity by a licensed physician, begin exercise in a cool environment and gradually increase the duration, intensity, and heat exposure for 2 weeks to acclimatize and demonstrate heat tolerance under the direction of a licensed healthcare professional
4. If return to activity is difficult, consider a laboratory exercise-heat tolerance test about one month post-incident.
5. Athlete may be cleared for full competition if heat tolerance exists after 2–4 weeks of training.

The NIAA also recommends that any athlete suspected of having suffered *exertional heat exhaustion* be referred to a licensed physician for follow-up medical examination and clearance.

References

- Corey Stringer Institute, University of Connecticut
- Armstrong LE, Casa DJ, Millard-Stafford M, Moran DS, Pyne SW, Roberts WO. American College of Sports Medicine position stand. Exertional heat illness during training and competition. Med Sci Sports Exerc.2007;39:556-72.
- Binkley HM, Beckett J, Casa DJ, et al. National Athletic Trainers' Association position statement: exertional heat illnesses. Journal of Athletic Training. 2002;37:329-343.
- Casa DJ, and Csillan D. Preseason Heat-Acclimatization Guidelines for Secondary School Athletics Journal of Athletic Training. 2009;44:332-333.

Guidelines: 5/24/2012

- Dr. Carol Scott, M.D. University of Nevada/Reno
- James Porter, NATA / ATC : Las Vegas, Nevada